1. (Amended) A method of treating a chromosomal abnormality in a fetus by performing a comprehensive biochemical analysis of a plurality of metabolites in a specimen of bodily fluid from a patient comprising:

obtaining a patient profile of a plurality of metabolites contained in the specimen by measuring the level of each metabolite in the specimen,

generating a biochemical characterization of the chromosomal abnormality in the fetus, wherein the characterization comprises a list of each of the plurality of metabolites of the patient profile, measured during the obtaining step, with the level of each respective metabolite,

analyzing the plurality of metabolites of the patient profile with respect to a control profile of the metabolites, the control profile being representative of normal levels of the metabolites, by identifying each metabolite having a different level in comparison with the normal level of that metabolite, and

prescribing a biochemical treatment for each respective metabolite having a different level when compared with the normal level of that metabolite.

2. (Amended) The method of Claim 1 wherein the analyzing the patient profile with the control profile step is accomplished by comparing the levels of metabolites in the patient profile with the mean levels and standard deviations for each respective metabolite of the control profile.

3. (Amended) The method of Claim 1 wherein the analyzing the patient profile with the control profile step is accomplished by using a nonparametric analysis to compare the

levels of metabolites in the patient profile with the median levels of each respective metabolite of the control profile.

4. (Amended) The method of Claim 1 wherein the analyzing step comprises:

determining if a formiminoglutamic acid level of the patient profile is less than a formiminoglutamic acid level of the control profile to analyze a level of mono-carbon in the patient profile relative to a level of mono-carbon in the control profile,

determining if a homocysteine level of the patient profile is increased relative to a homocysteine level of the control profile to analyze the level of homocysteine in the patient profile,

determining if a normetanephrine level of the patient profile is increased relative to a normetanephrine level of the control profile to analyze the level of normetanephrine in the patient profile,

determining if an oxalic acid level of the patient profile is decreased relative to an oxalic acid level of the control profile to analyze a level of vitamin B6 in the patient profile relative to a level of vitamin B6 in the control profile,

determining if a serine level of the patient profile is decreased relative to a serine level of the control profile to analyze the level of serine in the patient profile, and

determining if a tetra-hydro-biopterin level of the patient profile is decreased relative to a tetra-hydro-biopterin level of the control profile to analyze the level of tetra-hydro-biopterin in the patient profile.

5. (Amended) The method of Claim 1 wherein the prescribing comprises:

prescribing a mono-carbon related supplement to be ingested by the patient if the mono-carbon level in the patient profile is less than the mono-carbon level in the control profile, wherein the mono-carbon related supplement is a supplement chosen from the group consisting of folate, vitamin B12, and a mono-carbon donor,

prescribing a homocysteine related supplement to be ingested by the patient if the homocysteine level in the patient profile is increased relative to the homocysteine level in the control profile, wherein the homocysteine related supplement is a supplement chosen from the group consisting of folate, vitamin B6, vitamin B12, and a mono-carbon donor,

prescribing a normetanephrine related supplement to be ingested by the patient if the normetanephrine level in the patient profile is increased relative to the normetanephrine level in the control profile, wherein the normetanephrine related supplement is a supplement chosen from the group consisting of folate, vitamin B12, and a mono-carbon donor,

prescribing vitamin B6 to be ingested by the patient if the vitamin B6 level in the patient profile is decreased relative to the vitamin B6 level in the control profile,

prescribing serine to be ingested by the patient if the serine level in the patient profile is decreased relative to the serine level in the control profile, and

prescribing tetra-hydro-biopterin to be ingested by the patient if the tetra-hydro-biopterin level in the patient profile is decreased relative to the tetra-hydro-biopterin level in the control profile.

6. (Amended) The method of Claim 1 wherein the analyzing step is performed by analyzing multiple categories of metabolite groups simultaneously.

7. (Amended) A method of performing a comprehensive biochemical analysis of a specimen of bodily fluid from a patient in order to treat Down Syndrome in a fetus comprising:

obtaining a patient profile of a plurality of metabolites present in the specimen of bodily fluid,

generating a global biochemical characterization of the abnormality in the fetus, wherein the global biochemical characterization comprises a list containing the name and level of each metabolite of the patient profile identified in the obtaining step,

analyzing the metabolites contained in the patient profile with respect to a control profile of metabolites, the control profile being representative of normal levels of the metabolites contained in the patient profile, by identifying each metabolite of the patient profile that has a different level when compared with the level of that respective metabolite in the control profile, the analysis being performed for more than ~~one~~ metabolite,

determining an activity level for an enzyme that corresponds to each respective metabolite identified in the analyzing step, wherein the respective enzyme is an enzyme that metabolizes a substrate to form the respective metabolite, and

prescribing a biochemical treatment for each metabolite of the patient profile that has a different level when compared with the level of that respective metabolite in the control profile, wherein the prescribing step comprises

prescribing a cofactor supplement if the enzyme activity for a metabolite of the patient profile is low relative to the level of that metabolite in the control profile, the cofactor being a cofactor that increases the activity of the respective enzyme.

8. (Amended) A method of characterizing the levels of a plurality of metabolites that are present in a fetus with a chromosomal abnormality by performing a comprehensive biochemical analysis of a specimen of amniotic fluid from a patient comprising:

obtaining a patient profile of a plurality of metabolites present in the specimen of amniotic fluid using a gas chromatograph/mass spectrometer system,

comparing the patient profile with an abnormal profile, wherein the abnormal profile represents a control profile of metabolite levels that are representative of levels of metabolites in patients suffering from Down Syndrome, and

analyzing the patient profile with respect to the abnormal profile by identifying each metabolite that has a same level when compared with the level of that respective metabolite in the abnormal profile.

9. (Amended) The method of Claim 8 wherein the comparing the patient profile with respect to the abnormal profile step is accomplished by comparing the levels of metabolites in the patient profile with the mean levels and standard deviations for each respective metabolite of the abnormal profile.

10. (Amended) The method of Claim 8 wherein comparing the patient profile with respect to the abnormal profile step is accomplished by using a nonparametric analysis to compare the levels of metabolites in the patient profile with the median levels of each respective metabolite of the abnormal profile.

11. (Amended) The method of Claim 8 wherein the analyzing step comprises:

determining if a formiminoglutamic acid level of the patient profile is less than a formiminoglutamic level of the abnormal profile,

determining if a homocysteine level of the patient profile is increased relative to a homocysteine level of the abnormal profile,

determining if a normetanephrine level of the patient profile is increased relative to a normetanephrine level of the abnormal profile,

determining if an oxalic acid level of the patient profile is decreased relative to an oxalic acid level of the abnormal profile,

determining if a serine level of the patient profile is decreased relative to a serine level of the abnormal profile, and

determining if a tetra-hydro-biopterin level of the patient profile is decreased relative to a tetra-hydro-biopterin level of the abnormal profile.

Please add new claims 12-14 as follows:

12. (New) The method of Claim 7 wherein the prescribing step further comprises:

instructing the patient to reduce ingestion of a cofactor if the enzyme activity for a metabolite of the patient profile is high relative to the level of that metabolite in the control profile, the cofactor being a cofactor that increases the activity of the respective enzyme.

13. (New) The method of Claim 7 wherein the prescribing step further comprises:

blocking the activity of an enzyme if the enzyme activity for a metabolite of the patient profile is high relative to the level of that metabolite in the control profile.

14. (New) The method of Claim 8 further comprising:

prescribing a supplement to be ingested by the patient for each respective metabolite of the patient profile that has a different level when compared with the level of that respective metabolite in the abnormal profile, wherein the prescribing comprises

prescribing a mono-carbon supplement to be ingested by the patient if the formiminoglutamic acid level in the patient profile is less than the formiminoglutamic acid level in the abnormal profile, wherein the mono-carbon supplement is a supplement chosen from the group consisting of folate, vitamin B12, and a mono-carbon donor,

prescribing a homocysteine supplement to be ingested by the patient if the homocysteine level in the patient profile is increased relative to the homocysteine level in the abnormal profile, wherein the homocysteine supplement is a supplement chosen from the group consisting of folate, vitamin B6, vitamin B12, and a mono-carbon donor,

prescribing a normetanephrine supplement to be ingested by the patient if the normetanephrine level in the patient profile is increased relative to the normetanephrine level in the abnormal profile, wherein the normetanephrine supplement is a supplement chosen from the group consisting of folate, vitamin B12, and a mono-carbon donor,

prescribing vitamin B6 to be ingested by the patient if the oxalic acid level in the patient profile is decreased relative to the oxalic acid level in the abnormal profile,

prescribing serine to be ingested by the patient if the serine level in the patient profile is decreased relative to the serine level in the abnormal profile, and

prescribing tetra-hydro-biopterin to be ingested by the patient if the tetra-hydro-biopterin level in the patient profile is decreased relative to the tetra-hydro-biopterin level in the abnormal profile.